

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT			1. Contract ID Code Cost Contract	Page 1 Of 25
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2. Amendment/Modification No. P00005	3. Effective Date 2007APR10	4. Requisition/Purchase Req No. SEE SCHEDULE	5. Project No. (If applicable)
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6. Issued By U.S. ARMY TACOM LCMC AMSTA-AQ-ABGA JANET JOUDAS (586)574-7273 WARREN, MICHIGAN 48397-5000 HTTP://CONTRACTING.TACOM.ARMY.MIL EMAIL: JOUDASJ@TACOM.ARMY.MIL WEAPON SYSTEM: WPN SYS: 00	Code W56HZV	7. Administered By (If other than Item 6) OFFICE OF NAVAL RESEARCH CHICAGO REGIONAL OFFICE 230 SOUTH DEARBORN STREET, ROOM 380 CHICAGO, IL 60605-1595	Code N62880
		SCD C	PAS NONE
		ADP PT N62880	

8. Name And Address Of Contractor (No., Street, City, County, State and Zip Code) OAKLAND UNIVERSITY OFFICE OF THE CONTROLLER 110 NORTH FOUNDATION HALL ROCHESTER, MI 48309-4401 TYPE BUSINESS: Other Educational	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	9A. Amendment Of Solicitation No. 9B. Dated (See Item 11) 10A. Modification Of Contract/Order No. DAAE07-03-C-L110 10B. Dated (See Item 13) 2003MAY30
Code 5K597	Facility Code	

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in item 14. The hour and date specified for receipt of Offers

☐ is extended, ☐ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods:
(a) By completing items 8 and 15, and returning _____ copies of the amendments: (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. **FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER.** If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. Accounting And Appropriation Data (If required)
SEE SECTION G (IF APPLICABLE)

13. THIS ITEM ONLY APPLIES TO MODIFICATIONS OF CONTRACTS/ORDERS

KIND MOD CODE: G

It Modifies The Contract/Order No. As Described In Item 14.

<input type="checkbox"/>	A. This Change Order is Issued Pursuant To: The Contract/Order No. In Item 10A.	The Changes Set Forth In Item 14 Are Made In
<input type="checkbox"/>	B. The Above Numbered Contract/Order Is Modified To Reflect The Administrative Changes (such as changes in paying office, appropriation data, etc.) Set Forth In Item 14, Pursuant To The Authority of FAR 43.103(b).	
<input checked="" type="checkbox"/>	C. This Supplemental Agreement Is Entered Into Pursuant To Authority Of: Mutual Agreement of Both Parties	
<input type="checkbox"/>	D. Other (Specify type of modification and authority)	

E. IMPORTANT: Contractor ☐ is not, ☒ is required to sign this document and return _____ copies to the Issuing Office.

14. Description Of Amendment/Modification (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

SEE SECOND PAGE FOR DESCRIPTION

Except as provided herein, all terms and conditions of the document referenced in item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. Name And Title Of Signer (Type or print)		16A. Name And Title Of Contracting Officer (Type or print) DEREK MCALEER MCALEERD@TACOM.ARMY.MIL (586)574-8093	
15B. Contractor/Offeror _____ (Signature of person authorized to sign)	15C. Date Signed	16B. United States Of America By _____ /SIGNED/ (Signature of Contracting Officer)	16C. Date Signed 2007APR10

NSN 7540-01-152-8070

PREVIOUS EDITIONS UNUSABLE

30-105-02

STANDARD FORM 30 (REV. 10-83)

Prescribed by GSA FAR (48 CFR) 53.243

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SECTION A - SUPPLEMENTAL INFORMATION

Modification P00005

1. The purpose of this bilateral modification is to add additional scope and Contractor Manpower Reporting Requirements(CMR), update the CDRLs and clauses and extend the period of performance.
2. CLINS 0001AE and 0001AF are established and funded in the amounts of \$734,500.00 and \$377,375.00 consecutively to cover this action.
3. CLIN 0003 is established as the option CLIN for H.2 - Option for Additional Level of Effort.
4. CLIN 0004 is established on a not separately priced (NSP) basis for CMR.
4. Sections B.4 - Estimated Cost and Payment for CLIN 0003 - level of Effort, B.5 - Material, B.6 Overruns/Underruns, B.7 - Funding, B.8 - Rate Schedule and B.9 are added in support of the Option and attached herein.
5. Sections C.17, C.18, C.19, C.20, C.21, C.22 and C.23 are added to the scope and are highlighted by underline and attached herein. Clause C-1 FAR 52.237-4000 Contractor Manpower reporting (CMR) (Feb/2007) is added.
6. Section F.1.1 is updated to reflect a period of performance of 31 Dec 09. F.1.2 is added to reflect the period of performance for C.20 of being nine months after award of modification. Changes for Section F are attached herein.
7. Section G - Communications, is updated to reflect the current COTR and ACO and attached herein.
8. Sections D, E, H & I - Various clauses are added and/or updated and attached herein.
9. Special Provisions: Section H.2 - Option for Additional Level of Effort is added reflecting no hours being exercised as of this modification. H.3 - Work Directive Limitation of Cost is added, along with H.4 - Reference to the Subcontracting Plan. All clauses are attached herein.
10. The CDRLS are updated and attached herein to include new contract references, current engineer and buyer.
11. As a result of this modification, the estimated cost of this contract is increased by \$1,111,875.00 from \$3,907,000.00 to \$5,018,875.00.
12. All other terms and conditions remain unchanged.

*** END OF NARRATIVE A 0002 ***

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001	<p>SECTION B - SUPPLIES OR SERVICES AND PRICES/COSTS</p> <p><u>SERVICES LINE ITEM</u></p> <p>SECURITY CLASS: Unclassified</p> <p>Contractor shall furnish all the supplies and services to accomplish the tasks specified in Section C, for the Fastening and Joining Research Institute (FAJRI)</p> <p>Est. Cost: \$5,018,875.00 Total Est. Cost: \$5,018,875.00</p> <p>Completion Date: 31 Dec 09</p> <p>(End of narrative B001)</p>				
0001AE	<p><u>SERVICES LINE ITEM</u></p> <p>NOUN: OAKLAND UNIV/F&J NON-CAAS PRON: R362C326R3 PRON AMD: 01 ACRN: AE AMS CD: 63300553300</p> <p><u>Inspection and Acceptance</u> INSPECTION: Destination ACCEPTANCE: Destination</p> <p><u>Deliveries or Performance</u> DLVR SCH PERF COMPL <u>REL CD</u> <u>QUANTITY</u> <u>DATE</u> 001 0 SEE SECTION F</p> <p>\$ 734,500.00</p>				\$ 734,500.00
0001AF	<p><u>SERVICES LINE ITEM</u></p> <p>NOUN: OAKLAND UNIV - FAST & JOINING PRON: R362C322R3 PRON AMD: 02 ACRN: AF AMS CD: 63300553300</p> <p><u>Inspection and Acceptance</u> INSPECTION: Destination ACCEPTANCE: Destination</p> <p><u>Deliveries or Performance</u> DLVR SCH PERF COMPL <u>REL CD</u> <u>QUANTITY</u> <u>DATE</u> 001 0 SEE SECTION F</p>				\$ 377,375.00

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003	<p>\$ 377,375.00</p> <p><u>SERVICES LINE ITEM</u></p> <p>SECURITY CLASS: Unclassified</p> <p>Level of Effort: -0- man-hours</p> <p>Contractor shall furnish all the supplies and services to accomplish the task specified in Section C.22 - C.23 of the "Scope of Work"</p> <p>Est. Cost: \$0.00</p> <p>(End of narrative B001)</p> <p><u>Inspection and Acceptance</u> INSPECTION: Destination ACCEPTANCE: Destination</p>				
0004	<p><u>DATA ITEM</u></p> <p>SECURITY CLASS: Unclassified</p> <p>The contractor shall provide the information required by the Contract Clause entitled CONTRACT MANPOWER REPORTING (CMR), FAR 52.237-4000.</p> <p>Unit Identification Code (UIC): W4GGAA</p> <p>(End of narrative B001)</p> <p><u>Inspection and Acceptance</u> INSPECTION: Destination ACCEPTANCE: Destination</p>			\$ ** NSP **	\$ ** NSP **

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B.4 Estimated Cost and Payment for CLIN 0003 - Level of Effort

B.4.1 The estimated cost for the performance of the work under this contract is set forth in Section B. In consideration of performance of the work specified under CLIN 0003, the Government anticipates paying the Contractor the Total Estimated Cost amount shown. The total estimated cost of CLIN 0003 shall constitute the estimated cost for the purpose of the Contract Clause entitled "Limitation of Costs", but neither the Government nor the Contractor guarantee the accuracy of said estimate.

B.4.2 Allowable cost shall be determined and payment thereof shall be provided, in accordance with the Contract Clause hereof entitled "Allowable Cost and Payment", FAR 52.216-7.

B.5 Material

B.5.1 For the purpose of this contract, "material" shall be defined as stated in FAR 31.205-26. In the event that the Contractor elects to subcontract for engineering, program management support, stress and design analysis, quality assurance, testing, development and fabrication for prototype hardware, and technical support services, then these subcontracted services shall be paid to the Contractor as if their firm had directly performed this effort.

B.6 Overruns/Underruns

B.6.1 In general, the Government will address both overruns and underruns via the "Limitation of Cost" General Provision of the contract. To the extent consistent with law, regulation, and customer requirements, the PCO will determine whether Work Directives projecting an overrun can be used to offset those projecting and underrun.

B.7 Funding

B.7.1 The Contractor shall notify the Government in accordance with the Contract Clause hereto entitled "LIMITATION OF COST" whenever he has reason to believe that the funds allotted to this Contract by Work Directive are neither insufficient or excessive for the performance of the work required.

B.8 Rate Schedule

B.8.1 For Option hours exercised, dollars will be obligated against the contract in accordance with the rate schedule set forth below.

B.8.2 If the date of option is <u>exercised falls on or between:</u>	<u>The applicable Hourly Rate is:</u>
On or before 31 Dec 09	\$160.76 Est. Cost

B.9 The above rates include the minimum levels of material (\$7906.00 total for all 1,000 hours) and travel (\$1185.00 total for all 1,000 hours) costs anticipated to be required for contract performance. If at any time during contract performance, it is determined that additional material or travel costs are required to complete performance of the contract effort, the contractor shall notify the Government and shall include an estimate of the amount of funding which is required to complete performance of the authorized hours. For purposes of this clause, material shall be defined as set forth in FAR 31.205-26. If the Government authorizes additional funds for material or travel, the appropriate funds will be added to the contract on a cost reimbursement only basis and as a separate CLIN.

*** END OF NARRATIVE B 0002 ***

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SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

<u>Status</u>	<u>Regulatory Cite</u>	<u>Title</u>	<u>Date</u>
C-1 ADDED	52.237-4000 (TACOM)	CONTRACTOR MANPOWER REPORTING (CMR)	FEB/2007

The Office of the Assistant Secretary of the Army (Manpower & Reserve Affairs) operates and maintains a secure Army data collection site where the contractor will report ALL contractor manpower (including subcontractor manpower) required for performance of this contract. The contractor is required to completely fill in all the information in the format using the following web address: <https://cmra.army.mil> . The required information includes the following:

- (1) Contracting Office, Contracting Officer, Contracting Officer's Technical Representative;
- (2) Contract number, including task and delivery order number;
- (3) Beginning and ending dates covered by reporting period;
- (4) Contractor name, address, phone number, e-mail address, identity of contractor employee entering data;
- (5) Estimated direct labor hours (including sub-contractors);
- (6) Estimated direct labor dollars paid this reporting period (including sub-contractors);
- (7) Total payments (including sub-contractors);
- (8) Predominant Federal Service Code (FSC) reflecting services provided by contractor (and separate predominant FSC for each sub-contractor if different);
- (9) Estimated data collection cost;
- (10) Organizational title associated with the Unit Identification Code (UIC) for the Army Requiring Activity (the Army Requiring Activity is responsible for providing the contractor with its UIC for the purposes of reporting this information);
- (11) Locations where contractor and sub-contractors perform the work (specified by zip code in the United States and nearest city, country, when in an overseas location, using standardized nomenclature provided on website);
- (12) Presence of deployment or contingency contract language; and
- (13) Number of contractor and sub-contractor employees deployed in theater this reporting period (by country).

As part of its submission, the contractor will also provide the estimated total cost (if any) incurred to comply with this reporting requirement. Reporting period will be the period of performance not to exceed 12 months ending September 30 of each government fiscal year and must be reported by 31 October of each calendar year.

[End of Clause]

C.1 The contractor, as an independent contractor and not as an agent of the Government shall establish a Fastening and Joining Research Institute. The research will pursue the advance of science and technology in the general area of fastening and joining threaded fasteners, bolted joints of metals, composites plastics, and other polymers, adhesive bonding, resistance welding and advanced riveting. To satisfy the contract the contractor shall perform the following tasks.

C.2 IMPROVED RELIABILITY OF THE END CONNECTOR JOINT ON THE T158 TRACK

C.2.1 The contractor shall develop a static torque-tension-deformation signature of the T158 track end connector. The contractor shall prepare a test matrix varying the torque applied to the connector in order to obtain reliable measurements of the tension and deformation associated with the various levels.

C.2.1.1 The contractor shall use optical imaging to add a strain/stress signature to the T158 track end connector signature completed in C.2.1.

C.2.2 The contractor shall create a finite element model to simulate the work in C.2.1. This model shall be sufficiently refined such that the computer results correlate with the actual test results.

C.2.3 The contractor shall develop and present, to the Contracting Officers Representative (COR), a test plan to measure the in-service

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loads on the joint during vehicle operations. Based on the approved test plan the contractor shall instrument the T158 end connector hardware, and after coordination with the COR ship the hardware to YUMA Proving Grounds for government test and evaluation.

C.2.4 The contractor shall use the results obtained in C.2.1, C.2.2 and C.2.3 to perform additional finite element modeling, taking into account the addition of in-service loads. These results and FEA input files (as derived from the development of the FEA model in C.2.2) shall be provided to the COR within 5 months after contract award

C.2.5 The contractor shall develop a test matrix to evaluate the effects of friction forces between the pin and end connector (wedge) interface. The test matrix shall be established such that it takes into account different friction levels as would be seen when operating in different soil conditions.

C.2.6 The contractor shall determine and recommend a minimum (residual) level of fastener tension that would cause sufficient clamping force that prevents the sliding of the joint on the pin. This recommendation will be evaluated by the Government at a test site for effectiveness.

C.2.6.1 The contractor shall identify the desirable range of optical images and use pattern recognition technology in real-time to stop the tightening of the bolt once these images are achieved. The contractor shall correlate the new optical imaging technology to the Finite Element modeling.

C.2.6.2 The contractor shall work to increase the optics instrumentation speed of capturing and processing the optical images of the deformation field, and hence increase the chance of implementing of real-time control in bolt tightening using optics. The contractor shall document the speed before project start and at project completion to verify improvement.

C.2.7 The contractor shall prepare and deliver a Standard Operating Procedure (SOP) for use in manufacturing and field operations such that the joint integrity will be maintained with minimal maintenance actions.

C.2.8 A final report shall be published by the contractor detailing the results of the effort.

C.3 IMPROVING FASTENER DISCONNECT ON T158 TRACK PADS

C.3.1 The contractor shall review current literature on existing design specifications, including torque settings and factory and field assembly tools of current T158 track pad fastener. A clear understanding of the environment and abuse the fastener endures is needed.

C.3.2 The contractor shall investigate the advantages and disadvantages of quick-disconnect fasteners for the T158 track pad.

C.3.3 The contractor shall present 5 quick-disconnect fastener concepts to the COR for possible replacement of the current T158 track pad fastener. Up to two of these concepts will be selected by the COR for field testing. The contractor will supply 40 pieces of each chosen concept to the COR.

C.4 FASTENING OF COMPOSITE JOINTS

C.4.1 The contractor shall use a five-spindle electric nut runner to tighten five \bd-20, SAE Grade 8 fasteners on a composite flange simultaneously to 100 ft-lb torque. Each fastener shall be instrumented to indicate its tension via a digital display. A torque-tension relationship will then be recorded and established.

C.4.2 Using a manual digital torque wrench in place of the five-spindle electric nut runner, the contractor shall repeat C.4.1. An influence coefficient matrix will be created and inverted so that uniform clamping force is created in each joint after all fasteners are tightened.

C.4.3 The contractor shall monitor clamping forces for hard composite joints as well as for gasketed composite joints to determine when relaxation ceases and a steady state is achieved.

C.4.4 The contractor shall submit a final recommendation of fastening order, tension, and pattern along with the information regarding the tension decrease in a fastened joint as subsequent fasteners are tightened.

C.4.5 The contractor shall use a digital torque wrench, multiple-spindle nut-runner, and strain gauged bolts to develop the static torque/tension/deformation/strain/stress signature for a composite joint.

C.4.6 The contractor shall use clamping force optical images correlating to the desired clamping load and use pattern recognition technology to stop the tightening once the images are recognized.

C.4.7 The contractor shall study the effects of drilling bolt holes in a composite by measuring the effects on the joint strength. A summary of the results will be submitted to the COR and included in the final report.

C.4.8 The contractor shall study the effects of service loads on the integrity of the composite joints. A summary of the results will be

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submitted to the COR and included in the final report.

C.4.9 The contractor shall recommend to the Government proper torque values for production pieces as well as for inspection.

C.4.10 The contractor shall conduct experimental research in order to study the variables related to both the mechanical fastening and the adhesive bonding of two different commercially available composite materials. The contractor shall identify the most significant variables that affect the reliability of composite and polymer joints.

C.4.11 The contractor shall provide conclusions and recommendations to the COR in order to improve the reliability, quality and safety of composite joints. The contractor shall document how joint reliability and quality improved throughout project.

C.4.12 A final report shall be published by the contractor detailing the results of the effort.

C.5 HEAD VERSUS NUT TORQUE SPECIFICATIONS

C.5.1 The contractor shall determine the torque-tension relationships with particular emphasis on the difference between head tightening and nut tightening. Through testing, a matrix will be constructed for fastener sizes between \ 'bd and \ 'be (and the metric equivalents), flanged head, standard hex head, flanged nut, standard hex nut, fine thread, coarse thread, various hole clearances, various finishes of the clamped parts, and various levels of friction.

C.5.2 The contractor shall submit recommended tensions for the various fasteners tested and the side from which each should be fastened (bolt side or nut side). Included in this recommendation should be any advantages of tightening one side over the other.

C.5.3 A final report shall be published by the contractor detailing the results of the effort.

C.6 BOLT TOGETHER FRAMES FOR HEMTT PLATFORM

C.6.1 The contractor shall review the finite element analysis data, provided as Government Furnished Information for the current bolt together HEMTT platform.

C.6.2 The contractor shall perform an overall systems analysis sufficient to recognize all contributing factors of frame torsional rigidity.

C.6.3 The contractor shall perform its own computer modeling and simulations and laboratory testing of bolted assemblies using various tightening strategies. A matrix will be assembled to show the results of these tests and the variations in the results.

C.6.4 The contractor shall recommend and provide a factory manufacturing installation procedure that optimizes frame/crossmember/fastener pattern and type. The manufacturing installation procedure shall be provided to the COR for review and approval. Recommendations will be provided to the COR on future areas of consideration for improving the HEMTT frame platform.

C.6.5 The contractor shall manufacture joints similar to the bolt-together frames of the HEMTT.

C.6.6 The contractor shall use a digital torque wrench to tighten bolts to a pre-determined load. Analyze the torque-tension relationship. Monitor and analyze the elastic interaction between bolts in the same joint.

C.6.7 The contractor shall compare time/cycles to loosening using the vibration loosening test machine for no less than 3 locking methods. Contractor shall analyze and compare the data.

C.6.8 The contractor shall make recommendations to the COR on ways to reduce loosening due to vibration.

C.6.9 A final report shall be published by the contractor detailing the results of the effort.

C.7 REAL-TIME CONTROL OF FASTENER TIGHTENING

C.7.1 The contractor shall use ultrasonic wave lengths to determine bolt elongation after a fastener has been tightened. They will develop a device to measure real-time fastener data. Measurements of wave lengths will be conducted while the fastener is being tightened.

C.7.2 The contractor shall relate, and present in matrix form, the wave length to fastener elongation relationship.

C.7.3 The contractor shall develop and deliver to the COR a prototype device, along with documentation explaining the technology, that may be used in manufacturing that stops fastener tightening at a pre-determined value of torque, torque-angle, tension, or wave-length stretch.

C.7.4 The contractor shall develop a test fixture to measure, on the multi-spindle nut-runner, the spindle torque, clamp force, bolt

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elongation, underhead friction torque, and thread friction torque, as well as the bolt elongation using ultrasonics. Data collected through a multi-channel data acquisition system will be recorded and used to stop the tightening of an individual bolt when it has reached the desired elongation.

C.7.5 The contractor shall work to increase the signal sampling rate of the ultrasonic instrumentation from 20Hz to 2000Hz or more, in order to allow higher rpm for both tightening (from the current limit of 1 or 2 rpm).

C.7.6 A final report shall be published by the contractor detailing the results of the effort.

C.7.7 The contractor shall report progress to the COR.

C.8 EFFICIENT FEA MODELING METHODS OF THICK COMPOSITE JOINTS

C.8.1 The contractor shall build two detailed localized joint models, one bolted and one hinged, using software that has been approved by the COR. These models must be capable of all the typical inputs to bolted or hinged joint analyses inclusive of friction, clamp force, inertia, fastening sequence, etc. The purpose of this detailed model is for recovering stresses and strains of the joint elements.

C.8.2 The contractor shall generate an idealization of this detailed model for use in a system model. The contractor shall also demonstrate the capability of recovering the response of the detailed joint for use in a large system model.

C.8.3 A final report shall be published by the contractor detailing the results of the effort.

C.9 INCREASING THE ADHESION OF EPDM RUBBER TO VARYING MATERIALS

C.9.1 The contractor shall investigate methods to improve the adhesion of EPDM rubber to titanium, silicon carbide, graphite/epoxy, and S2 glass/epoxy.

C.9.2 The Government will supply silicon carbide tiles, titanium plates, and Vacuum Assisted Resin Transfer Molded (RTM) laminates to the contractor approximately four weeks after the contractor notifies the Government that the material is needed for performance. The materials will be the current composition being considered for armor applications but will be of different thicknesses to prevent release of sensitive data.

C.9.3 The contractor shall experimentally evaluate, against current commercial standards, the adhesion of EPDM rubber to each of the following materials using at least three test samples each: EPDM to titanium, EPDM to graphite/epoxy, EPDM to S2 glass/epoxy, and EPDM to silicon carbide tiles.

C.9.4 The contractor shall develop and deliver a test plan in accordance with Data Item Description (DID) DI-NDTI-80566 entitled Test Plan at CDRL A004) and obtain approval of the COR. In the test plan the contractor shall define the configuration of the test samples and test procedure. Different test procedures are acceptable for the different material combinations.

C.9.5 A final report shall be published by the contractor detailing the results of the effort.

C.10 DETERMINING THE STRUCTURAL EFFECT OF HOLES IN CERAMIC TILES USED IN ARMOR PLATES

C.10.1 The contractor shall analytically determine the structural effect of holes in ceramic tiles used for structural armors. The contractor shall propose and the COR must approve the software selected to conduct the analysis.

C.10.2 The contractor shall analyze at least two configurations supplied by the Government. These two configurations will be provided to the contractor 30 days prior to the start of this specific effort.

C.10.3 The contractor shall recommend methods based on analysis to reduce the effect of the holes in the tiles on structural performance.

C.10.4 The Government will supply the required materials and laminates, considered GFP and to be returned to the Government upon project completion, to the contractor for testing approximately four weeks after the contractor places the order.

C.10.5 The contractor shall develop and deliver test plan in accordance with Data Item Description DI-NDTI-80566 (CDRL A004) detailing sample geometry and test procedure and obtain approval of the COR before initiation any testing.

C.10.6 The contractor shall conduct mechanical tests and compare these results to the analysis. Any discrepancies between the analytical and experimental shall be resolved.

C.10.7 A final report shall be published by the contractor detailing the results of the effort.

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C.11 NON-DESTRUCTIVE TESTING OF STEEL REINFORCED BAND TRACK

C.11.1 The contractor shall develop a non-destructive test method to determine the functionality of a steel reinforced band track. The contractor shall show results indicating both functional and non-functional band tracks.

C.11.2 The contractor shall develop (in accordance with Data Item Description DI-NDTI-80566 (CDRL A004) and present a test plan for using this test method in the field for COR approval.

C.11.3 A final report shall be published by the contractor detailing the results of the effort.

C.12 SELF LOOSENING OF THREADED FASTENERS UNDER CYCLIC TRANSVERSE LOADS

C.12.1 The contractor shall construct a mathematical model simulating the effect of different variables such as bolt size, grip length, bolt stiffness, thread friction, bearing friction, hole clearance, joint stiffness, washer, level and frequency of the excitation, and the clamp load level, on the self loosening of threaded fasteners due to cyclic transverse loads.

C.12.2 The contractor shall construct experimental research to study the effect of different variables such as bolt size, grip length, bolt stiffness, thread friction, bearing friction, hole clearance, joint stiffness, washer, level and frequency of the excitation, and the clamp load level, on the self loosening of threaded fasteners due to cyclic transverse loads.

C.12.3 The contractor shall correlate the experimental and the mathematical simulation results.

C.12.4 The contractor shall provide conclusions and recommendations to the COR regarding reducing the potential loosening of threaded fasteners under dynamic and impact loading.

C.12.5 A final report shall be published by the contractor detailing the results of the effort.

C.13 EFFECT OF NON-PARALLEL CONTACT IN BOLTED JOINTS

C.13.1 The contractor shall conduct experimental research to study the effect of non-parallel contact, between the bolt head/nut and the surface of the joint, on the reliability of bolted assemblies. The contractor shall study the effect of a 5 degrees and 10 degrees wedge angle as compared to a perfectly parallel contact situation.

C.13.2 The contractor shall conduct Contact mechanics modeling to study the effect of non-parallel contact, between the bolt head/nut and the surface of the joint, on the reliability of bolted assemblies.

C.13.3 The contractor shall conduct Finite Element Analysis to study the effect of non-parallel contact, between the bolt head/nut and the surface of the joint, on the reliability of bolted assemblies.

C.13.4 The contractor shall compare the experimental results with both the contact mechanics model and FEA.

C.13.5 The contractor shall provide conclusions and recommendations to the COR regarding the minimization of the effect of non-parallel contact on the joint integrity and reliability.

C.13.6 A final report shall be published by the contractor detailing the results of the effort.

C.14 PREDICTING CLAMP LOAD LOSS IN BOLTED JOINTS UNDER FULLY REVERSED CYCLIC LOADS

C.14.1 The contractor shall conduct experimental research to study the effect of strain hardening on clamp load due to fully reversed cyclic load acting on the joint.

C.14.2 The contractor shall compare the results with the theoretical result obtained by an earlier study at FAJRI and given to the COR prior to project start.

C.14.3 The contractor shall provide conclusions and recommendations to the COR regarding the minimization of clamp load loss due to cyclic loading on bolted assemblies.

C.14.4 A final report shall be published by the contractor detailing the results of the effort.

C.15 FASTENING AND JOINING OF COMPOSITE AND POLYMER JOINTS

C.15.1 The contractor shall conduct experimental research in order to study the variables related to both the mechanical fastening and the adhesive bonding of two different composite materials.

C.15.2 The contractor shall identify the most significant variables that affect the reliability of composite and polymer joints.

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C.15.3 The contractor will provide conclusions and recommendations to the COR in order to improve the reliability, quality and safety of composite joints.

C.15.4 A final report shall be published by the contractor detailing the results of the effort.

C.16 ELASTIC INTERACTION BETWEEN BOLTS IN FLANGED GASKETED JOINTS

C.16.1 The contractor shall perform experimental research to study the loss of clamp load due to elastic interaction between bolts in gasketed joints.

C.16.2 The contractor shall study the loss of clamp load due to gasket creep relaxation for two different types of gaskets, each of four different thicknesses and commercially available. The contractor shall determine when steady state is achieved.

C.16.3 The contractor shall study the effect of bolt grip length, bolt spacing, and the sequence of tightening.

C.16.4 The contractor shall provide conclusions and recommendations to the COR in order to improve the reliability, quality and safety of gasketed joints.

C.16.5 A final report shall be published by the contractor detailing the results of the effort.

C.17 LIGHT WEIGHT STRUCTURES JOINT RESEARCH

C.17.1 The contractor shall conduct research on the fastening and joining of advanced composite materials. The contractor shall purchase all materials, specimens, and equipment necessary to accomplish this work.

C.17.2 The contractor shall research fastener preload level effects on composite materials strength under a single lap/single bolt joint configuration using SAE Grade 8 bolts (both 3/8 and 1/2 diameter bolts). The joint preload levels should range from zero to one-hundred percent (0-100%) of the provided preload value and be tested in five percent (5%) increments.

C.17.3 The contractor shall perform research concerning washer diameter and thickness effects on the composite materials and strength of the joint. The Government will define five (5) washer sizes and contractor shall test sizes from fifty to one-hundred fifty percent (50-150%) of the stated sizes. The washer sizes shall be commercially available to the contractor.

C.17.4 The contractor shall generate and submit a draft technical report, with design recommendations, to the COTR for review and approval. Upon approval, the contractor shall submit five (5) final copies to the COTR.

C.17.5 A final report shall be published by the contractor detailing the results of the effort.

C.18 FATIGUE OF BOLTED JOINTS RESEARCH

C.18.1 The contractor shall conduct research on the fatigue failure mechanism of bolted joints.

C.18.2 The contractor shall test the effects of dimensional conformance on the fatigue performance of both 3/8 and 1/2 diameter threaded fasteners.

C.18.3 The contractor will optically measure the pitch diameter and thread profile angle on one (1) inch threaded segment of a sample of twenty (20) bolts to identify which bolts are conforming to the thread standards and which are not.

C.18.4 The contractor will perform testing on the measured twenty (20) bolt specimens to compare the fatigue performance of the conforming to that of the non-conforming conforming bolts.

C.18.5 The contractor shall generate and submit a draft technical report to the COTR for review and approval. Upon approval, the contractor shall submit five (5) final copies to the COTR.

C.18.6 A final report shall be published by the contractor detailing the results of the effort.

C.19 PURCHASE OF RESEARCH AND TESTING EQUIPMENT

C.19.1 The contractor shall purchase all the necessary equipment and software required to fulfill the contractual obligations stated in this contract.

C.19.2 The contractor shall obtain approval of the COTR, under CDRL A001, prior to purchasing any equipment with a dollar value above five-thousand dollars (\$5000.00). The contractor shall provide a listing of all equipment purchased under this contract to the COTR.

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C.20 T-154 TRACK ANALYSIS

C.20.1 The Government is experiencing ongoing issues with the existing T-154 track system. The T-154 track system posses of a single block, integral center guide, duel pin, duel end connector type design. It has been reported that the end connectors which connect each track block to the adjacent track block have a tendency to become loose. The loss of a track end connector will result in a track failure leading to a vehicle mobility kill.

C.20.2 The contractor shall analyze the entire existing T-154 track system and provide recommendations to prevent further end connector bolt loosening and clamp loss. Specifically, the contract shall provide an in-depth analysis of:

T-154 Track Block Body
T-154 Track Pin
T-154 Clamp Style End Connector

C.20.3 The contractor shall provide recommendations to prevent further possibility of track separation. The contractor shall propose recommendations with minimal fabrication modifications to minimize implementation costs to the government.

C.20.4 The contractor shall fabricate the improved T-154 track components and perform laboratory testing to verify the proposed improvements. The contractor shall perform baseline laboratory testing with production T-154 track components to be supplied by the government.

C.20.5 The contractor shall generate and submit a draft technical report to the COTR for review and approval. Upon approval, the contractor shall submit five (5) final copies to the COTR. This effort must be concluded and final copies submitted to the COTR within nine (9) months of the contract award date.

C.20.6~ A final report shall be published by the contractor detailing the results of the effort.

C.21 FASTENING AND JOINING SEMINARS AT TACOM

C.21.1 The contractor shall conduct four one-day seminars at TACOM on the latest fastening and joining technologies and methodologies.

C.21.2 The contractor shall provide documentation for up to twenty-five individuals for each seminar.

C.22 WORK DIRECTIVES

C.22.1 The following work (C.23) under this contract shall be performed in accordance with work directives issued by the Contracting Officer (CO). No work shall commence until the Contractor has received a fully-executed work directive. Work shall be performed in sequential order unless otherwise stated. Each work directive shall include the following information:

- (1) reference the applicable paragraph # in Section C
- (2) objective of the work to be performed
- (3) number of hours necessary to perform the work
- (4) material cost (if applicable)
- (5) estimated completion date
- (6) relative priority of the work to be performed.

C.22.2 The Contractor shall notify the Procuring Contracting Officer (PCO) immediately by telephone if the dates that the work must be performed or data to be delivered will not be met. The Contractor shall follow-up this telephone call with a letter to the PCO, detailing the reasons why the requirements will not be met and proposed corrective actions.

C.22.3 The Government has the unilateral right to increase, decrease or prioritize the work to be performed hereunder by the issuance of Work Directives signed by the Contracting Officer. It is understood and agreed that such adjustments shall be made within the general scope of work and level of effort of the contract.

C.22.4 If, at any time, the Contractor has reason to believe that the amount (hours, material, and travel) which it expects to incur in the performance of a Work Directive are insufficient, the Contractor shall provide written notification to the PCO and the COTR explaining the cost growth and dollar amount in addition to the hours needed to complete the work directive. The Contractor shall furnish a revised statement of total hours to complete such work together with said notice. The Contractor shall not exceed any amount authorized by the work directive without the express written permission of the PCO.

C.23 EMERGENCY LABORATORY TESTING AND CONSULTATION - Level of Effort (CLIN 0003)

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C.23.1 The Government periodically experiences emergency situations involving the fastening and joining of military components that require immediate resolution. The following are examples of tasks that may be requested by work directive.

C.23.2 The contractor shall provide consultation and / or laboratory testing services on the fastening and joining of military components, as indicated on a per Work Directive basis. The consultation and / or laboratory testing services hours shall be provided by the contractor as part of this contract.

C.23.3 The contractor shall expedite all emergency requests by the Government.

C.23.4 If necessary, the Government shall provide parts, technical data, etc. necessary for the consolation and laboratory testing services.

C.23.5 The contractor shall physically visit CONUS sites when movement of hardware is not possible.

C.23.6 The contractor shall provide verbal direction back to the COTR as soon as possible. The contractor shall provide brief reports of the consultation and laboratory findings back to the COTR as soon as possible.

C.23.7 The contractor shall inform the COTR of the available and used contract hours on a monthly basis.

C.24 PUBLICATIONS

C.24.1 The contractor shall publish a minimum of six journal papers and four conference papers.

C.24.2~ The contractor shall publish eight (8) additional journal papers on fastening and joining.

C.25 REPORTS AND DRAWINGS

C.25.1 Contractor's Progress Status and Management Report (CDRL A001) shall be submitted bi-monthly. The bi-monthly report shall be in accordance with the format and scope specified in the applicable Data Item Description (DD Form 1664). At a minimum, each report submitted shall address technical progress made during the two month period, problems encountered, and plans for the following two months. All reports shall be furnished to the Government in accordance with the requirements, quantities, and schedules set forth in the Contract Data Requirements List (DD Form 1423 and in accordance with the DID DI-MGMT-80227(T)).

C.25.2 The Contractor shall prepare/mark-up drawings and technical data in the format and scope specified in the applicable Data Item Description (DI-SESS-81002B). This information shall be furnished to the Government in accordance with the requirements, quantities, and schedules set forth in Contract Data Requirements List (DD Form 1423 A002).

C.25.3 The contractor shall submit a final technical report in accordance with CDRL A003 and DID DI-MISC-80711A(T) at the conclusion of the program. The Draft Final Report shall be submitted within forty-five (45) days after completion of all technical work under the contract (13 months and two weeks after award). The government shall review the Draft Final Report within thirty (30) days and return it to the Contractor for changes/corrections. The final Technical Report, in published format, shall be submitted within fifteen days after Government approval of the Draft Final Report.

C.25.4 The contractor shall submit a Test Plan in accordance with CDRL A004 (DI-NDTI-80566) 30 days prior to test.

C.26 MEETINGS

C.26.1 A program start meeting will be held at TACOM within 30 days of the contract award date.

C.26.2 Bi-monthly meetings will be held at the contractors facility so the status of the projects can be seen.

C.26.3 A program end meeting will be held at TACOM upon program completion.

*** END OF NARRATIVE C 0002 ***

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SECTION D - PACKAGING AND MARKING

<u>Status</u>	<u>Regulatory Cite</u>	<u>Title</u>	<u>Date</u>
D-1 ADDED	252.211-7003	ITEM IDENTIFICATION AND VALUATION (Alternate I version dated April 2005)	JUN/2005

NOTE: Paragraph (a) comes after paragraphs (b) through (d) below. It was placed there because it's content is inconsequential as none of the definitions contained therein are used in this Alternate I version of this DFARS clause.

- (b) The Contractor shall deliver all items under a contract line, subline, or exhibit line item.
- (c) For each item delivered under a contract line, subline, or exhibit line item under paragraph (b) of this clause, in addition to the information provided as part of the Material Inspection and Receiving Report specified elsewhere in this contract, the Contractor shall report the Governments unit acquisition cost.
- (d) The Contractor shall submit the information required by paragraph (c) of this clause in accordance with the data submission procedures at <http://www.acq.osd.mil/dpap/UID/DataSubmission.htm>.

(a) Definitions. As used in this clause--

"Automatic identification device" means a device, such as a reader or interrogator, used to retrieve data encoded on machine-readable media.

- Concatenated unique item identifier means
- (1) For items that are serialized within the enterprise identifier, the linking together of the unique identifier data elements in order of the issuing agency code, enterprise identifier, and unique serial number within the enterprise identifier; or
 - (2) For items that are serialized within the original part, lot, or batch number, the linking together of the unique identifier data elements in order of the issuing agency code; enterprise identifier; original part, lot, or batch number; and serial number within the original part, lot, or batch number.

Data qualifier means a specified character (or string of characters) that immediately precedes a data field that defines the general category or intended use of the data that follows.

DoD recognized unique identification equivalent means a unique identification method that is in commercial use and has been recognized by DoD. All DoD recognized unique identification equivalents are listed at <http://www.acq.osd.mil/dpap/UID/equivalents.html>.

DoD unique item identification means a system of marking items delivered to DoD with unique item identifiers that have machine-readable data elements to distinguish an item from all other like and unlike items. For items that are serialized within the enterprise identifier, the unique item identifier shall include the data elements of the enterprise identifier and a unique serial number. For items that are serialized within the part, lot, or batch number within the enterprise identifier, the unique item identifier shall include the data elements of the enterprise identifier; the original part, lot, or batch number; and the serial number.

Enterprise means the entity (e.g., a manufacturer or vendor) responsible for assigning unique item identifiers to items.

Enterprise identifier means a code that is uniquely assigned to an enterprise by an issuing agency.

Governments unit acquisition cost means

- (1) For fixed-price type line, subline, or exhibit line items, the unit price identified in the contract at the time of delivery;
- (2) For cost-type or undefinitized line, subline, or exhibit line items, the Contractors estimated fully burdened unit cost to the Government at the time of delivery; and
- (3) For items produced under a time-and-materials contract, the Contractors estimated fully burdened unit cost to the Government at the time of delivery.

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Issuing agency means an organization responsible for assigning a non-repeatable identifier to an enterprise (i.e., Dun & Bradstreets Data Universal Numbering System (DUNS) Number, Uniform Code Council (UCC) /EAN International (EAN) Company Prefix, or Defense Logistics Information System (DLIS) Commercial and Government Entity (CAGE) Code.

Issuing agency code means a code that designates the registration (or controlling) authority for the enterprise identifier.

Item means a single hardware article or a single unit formed by a grouping of subassemblies, components, or constituent parts.

Lot or batch number means an identifying number assigned by the enterprise to a designated group of items, usually referred to as either a lot or a batch, all of which were manufactured under identical conditions.

Machine-readable means an automatic identification technology media, such as bar codes, contact memory buttons, radio frequency identification, or optical memory cards.

Original part number means a combination of numbers or letters assigned by the enterprise at item creation to a class of items with the same form, fit, function, and interface.

Parent item means the item assembly, intermediate component, or subassembly that has an embedded item with a unique item identifier or DoD recognized unique identification equivalent.

Serial number within the enterprise identifier means a combination of numbers, letters, or symbols assigned by the enterprise to an item that provides for the differentiation of that item from any other like and unlike item and is never used again within the enterprise.

Serial number within the part, lot, or batch number means a combination of numbers or letters assigned by the enterprise to an item that provides for the differentiation of that item from any other like item within a part, lot, or batch number assignment.

Serialization within the enterprise identifier means each item produced is assigned a serial number that is unique among all the tangible items produced by the enterprise and is never used again. The enterprise is responsible for ensuring unique serialization within the enterprise identifier.

Serialization within the part, lot, or batch number means each item of a particular part, lot, or batch number is assigned a unique serial number within that part, lot, or batch number assignment. The enterprise is responsible for ensuring unique serialization within the part, lot, or batch number within the enterprise identifier.

Unique item identifier means a set of data elements marked on items that is globally unique and unambiguous.

Unique item identifier type means a designator to indicate which method of uniquely identifying a part has been used. The current list of accepted unique item identifier types is maintained at http://www.acq.osd.mil/dpap/UID/uid_types.html

[End of Clause]

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SECTION E - INSPECTION AND ACCEPTANCE

<u>Status</u>	<u>Regulatory Cite</u>	<u>Title</u>	<u>Date</u>
E-1	52.246-8	INSPECTION OF RESEARCH AND DEVELOPMENT--COST-REIMBURSEMENT (Alternate I dated April 1984)	MAY/2001

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SECTION F - DELIVERIES OR PERFORMANCE
DELIVERIES OR PERFORMANCE

- F.1 Period of Performance (POP)
- F.1.1 The period of performance for this effort shall be from date of contract award through 31 Dec 2009.
- F.1.2 The period of performance for C.20 - T 154 Track Analysis shall be nine months after award of contract.
- F.1.3 The period of performance for the option hours shall be twelve months from the date of the latest option exercise. The period of performance for individual work directives will be specified on the work directive itself. The work directive period of performance shall not extend beyond the contract period of performance.
- F.2 Deliveries / Shipping
- F.2.1 All technical data (reports) covered by this contract which have not been previously delivered shall be subject to electronic delivery to the Government upon completion or termination of this contract. All technical data/drawings to be delivered pursuant to this contract, shall contain all COTR approved changes.
- F.2.2 All technical data (reports) specified for delivery under this contract or any subcontract hereunder shall be provided in accordance with the " Rights in Technical Data" clause set forth in this contract. No other clauses, directives, standards, specifications or other implementation shall be deemed directly or by reference to enlarge or diminish such rights.
- F.2.3 The contractor shall be responsible for shipping all hardware and technical data (not in electronic format) F.O.B. Destination to the following address:
- Commander

U.S. Army Tank-automotive and Armaments Command

ATTN: Kevin Centeck

AMSTA-TR-R, MS159

Warren, MI 48397-5000

*** END OF NARRATIVE F 0001 ***

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SECTION G - CONTRACT ADMINISTRATION DATA

LINE <u>ITEM</u>	PRON/ AMS CD/ <u>MIPR</u>	OBLG STAT/ <u>ACRN</u>	<u>JOB ORD NO</u>			INCREASE/DECREASE <u>AMOUNT</u>		CUMULATIVE <u>AMOUNT</u>
0001AE	R362C326R3 63300553300	AE	2 62C326	\$	0.00	\$	734,500.00	\$ 734,500.00
0001AF	R362C322R3 63300553300	AF	2 62C322	\$	0.00	\$	377,375.00	\$ 377,375.00
NET CHANGE					\$	1,111,875.00		

SERVICE <u>NAME</u>	NET CHANGE <u>BY ACRN</u>	<u>ACCOUNTING CLASSIFICATION</u>				<u>ACCOUNTING STATION</u>		INCREASE/DECREASE <u>AMOUNT</u>
Army	AE	21	62040000066N6N7EP633005255Y	S20113		W56HZV	\$	734,500.00
Army	AF	21	62040000066N6N7EP6330052516	S20113		W56HZV	\$	377,375.00
NET CHANGE							\$	1,111,875.00

			PRIOR AMOUNT <u>OF AWARD</u>			INCREASE/DECREASE <u>AMOUNT</u>		CUMULATIVE <u>OBLIG AMT</u>
NET CHANGE FOR AWARD:	\$		3,907,000.00	\$		1,111,875.00	\$	5,018,875.00

<u>ACRN</u>	<u>EDI ACCOUNTING CLASSIFICATION</u>							
AE	21	060720400000	S20113	66N6N7E63300553300255Y	62C326S20113	W56HZV		
AF	21	060720400000	S20113	66N6N7E633005533002516	62C322S20113	W56HZV		
		<u>Status</u>	<u>Regulatory Cite</u>	<u>Title</u>			<u>Date</u>	

G-1 CHANGED 52.242-4016 COMMUNICATIONS MAY/2000

(a) Communications on technical matters pertaining to the contract shall be direct between the contractor and the Technical Representative. Communications for the Technical Representative shall be addressed to:

Name: Bill Mackie
e-mail: bill.mackie@us.army.mil

(b) The Administrative Contracting Officer's (ACO) name and email address are also provided if known at this time:

ACO: Josh Kabisch
e-mail: Joshua.Kabisch@navy.mil

(c) Please see the appointment letters prepared at time of contract award for functions the Technical Representative and ACO will perform on this contract.

[End of Clause]

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SECTION H - SPECIAL CONTRACT REQUIREMENTS

Status	Regulatory Cite	Title	Date
H-1 ADDED	252.203-7002	DISPLAY OF DOD HOTLINE POSTER	DEC/1991
H-2	252.235-7011	FINAL SCIENTIFIC OR TECHNICAL REPORT	NOV/2004
H-3	52.204-4005	REQUIRED USE OF ELECTRONIC CONTRACTING	SEP/2004
H-4	52.246-4026 (TACOM)	LOCAL ADDRESSES FOR DD FORM 250 AND WAWF RECEIVING REPORTS	SEP/2006

(a) The Contractor may use either the Material Inspection and Receiving Report (DD 250) or Wide Area Workflow (WAWF) to process receiving reports for inspection, acceptance, and payment. Use only one method per contract; not both.

(b) If you are using the Material Inspection and Receiving Report (DD 250), use one of the following methods to send each DD 250 pertaining to this contract to us:

(1) Our first preference is for you to use electronic mail (e-mail), using the following e-mail address: DD250@tacom.army.mil

(2) Our second preference is for you to use data facsimile (datafax) transmission, using this fax number:

(586) 574-7788 and use "DD250 mailbox" in the "to:" block of your fax cover or header sheet.

In either method, do not mix DD250s from more than one contract in a single transmission. That is, you may submit multiple DD250s in a single transmission, but they must all be against the same contract. These copies meet the requirements for the Purchasing Office copy and the Army Inventory Control Manager copy listed in tables 1 and 2 of DFARS Appendix F. The DD250 form may be found, in three different formats, on the World Wide Web at <http://www.dtic.mil/whs/directives/infomgt/forms/forminfo/forminfo2126.html>

(c) If you are using Wide Area Workflow (WAWF) instead of DD 250s, we may require copies of the WAWF Receiving Report, Bills of Lading, or other documentation to resolve delinquencies, payment issues, or other administrative issues. If this documentation is requested, use the same email address or fax number shown in paragraph (b) above to submit the information. No copies of the WAWF Receiving Report are required unless specifically requested by the PCO, buyer, or other appropriate government official.

[End of Clause]

SPECIAL PROVISIONS

H.2 OPTION FOR ADDITIONAL LEVEL OF EFFORT

H.2.1 The Government shall have the Unilateral right to increase the contract Level-of-Effort (LOE) by up to an additional 1,000 hours at the applicable hourly rate as specified in B.8.2. The Government may exercise this option at any time on or after contract award. The government may exercise this option in more than one increment. The Government has the Unilateral right either to add to any existing CLIN the hours added to the contract by the exercise of this option or to establish a new and separate CLIN for the additional hours. Hours exercised to date is -0-.

H.3 Work Directive Limitation of Cost

H.3.1 The Contractor shall notify the Contracting Officer in writing whenever they have reason to believe that the costs or hours incurred under the Work Directive in the next 30 days, when added to all costs or hours previously incurred, will exceed 75 percent of the estimated cost or hours specified on the Work Directive.

H.4 SUBCONTRACTING PLAN - Oakland University's subcontracting plan dated 20 Feb 07 is incorporated into this contract by reference only.

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SECTION I - CONTRACT CLAUSES

Status	Regulatory Cite	Title	Date
I-1	52.202-1	DEFINITIONS	JUL/2004
I-2	52.203-6	RESTRICTIONS ON SUBCONTRACTOR SALES TO THE GOVERNMENT	SEP/2006
I-3	52.203-12	LIMITATION ON PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS	SEP/2005
I-4	52.209-6	PROTECTING THE GOVERNMENT'S INTEREST WHEN SUBCONTRACTING WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR DEBARMENT	SEP/2006
I-5	52.219-8	UTILIZATION OF SMALL BUSINESS CONCERNS	MAY/2004
I-6	52.219-9	SMALL BUSINESS SUBCONTRACTING PLAN	SEP/2006
I-7	52.222-4	CONTRACT WORK HOURS AND SAFETY STANDARDS ACT--OVERTIME COMPENSATION	JUL/2005
I-8 ADDED	52.222-19	CHILD LABOR--COOPERATION WITH AUTHORITIES AND REMEDIES	JAN/2006
I-9	52.222-35	EQUAL OPPORTUNITY FOR SPECIAL DISABLED VETERANS, VETERANS OF THE VIETNAM ERA, AND OTHER ELIGIBLE VETERANS	SEP/2006
I-10	52.222-37	EMPLOYMENT REPORTS ON SPECIAL DISABLED VETERANS, VETERANS OF THE VIETNAM ERA, AND OTHER ELIGIBLE VETERANS	SEP/2006
I-11	52.223-5	POLLUTION PREVENTION AND RIGHT-TO-KNOW INFORMATION	AUG/2003
I-12	52.223-14	TOXIC CHEMICAL RELEASE REPORTING	AUG/2003
I-13	52.229-3	FEDERAL, STATE, AND LOCAL TAXES	APR/2003
I-14	52.230-6	ADMINISTRATION OF COST ACCOUNTING STANDARDS	APR/2005
I-15	52.232-25	PROMPT PAYMENT	OCT/2003
I-16	52.232-33	PAYMENT BY ELECTRONIC FUNDS TRANSFER--CENTRAL CONTRACTOR REGISTRATION	OCT/2003
I-17 ADDED	52.233-4	APPLICABLE LAW FOR BREACH OF CONTRACT CLAIM	OCT/2004
I-18	52.245-5	GOVERNMENT PROPERTY (COST-REIMBURSEMENT, TIME-AND-MATERIAL, OR LABOR-HOUR CONTRACTS) --ALTERNATE I (JUN 2003) (91-DEV-44) (Army Policy Alert Bulletin #97-009)	MAY/2004
I-19 ADDED	252.203-7001	PROHIBITION ON PERSONS CONVICTED OF FRAUD OR OTHER DEFENSE CONTRACT-RELATED FELONIES	DEC/2004
I-20 ADDED	252.225-7012	PREFERENCE FOR CERTAIN DOMESTIC COMMODITIES	JUN/2004
I-21 ADDED	252.225-7014	PREFERENCE FOR DOMESTIC SPECIALTY METALS (Alternate I dated April 2003)	JUN/2005
I-22	252.225-7016	RESTRICTION ON ACQUISITION OF BALL AND ROLLER BEARINGS	MAR/2006
I-23	252.225-7031	SECONDARY ARAB BOYCOTT OF ISRAEL	JUN/2005
I-24 ADDED	252.232-7010	LEVIES ON CONTRACT PAYMENTS	SEP/2005
I-25 ADDED	252.244-7000	SUBCONTRACTS FOR COMMERCIAL ITEMS AND COMMERCIAL COMPONENTS (DoD CONTRACTS)	NOV/2005
I-26 ADDED	52.204-7	CENTRAL CONTRACTOR REGISTRATION	JUL/2006

(a) Definitions. As used in this clause--

"Central Contractor Registration (CCR) database" means the primary Government repository for contractor information required for the conduct of business with the Government.

"Commercial and Government Entity (CAGE) code" means-

(1) A code assigned by the Defense Logistics Information Service (DLIS) to identify a commercial or Government entity; or

(2) A code assigned by a member of the North Atlantic Treaty Organization that DLIS records and maintains in the CAGE master file. This type of code is known as an "NCAGE code."

"Data Universal Numbering System (DUNS) number" means the 9-digit number assigned by Dun and Bradstreet, Inc. (D&B) to identify unique business entities.

"Data Universal Numbering System +4 (DUNS+4) number" means the DUNS number assigned by D&B plus a 4-character suffix that may be assigned by a business concern. (D&B has no affiliation with this 4-character suffix.) This 4-character suffix may be assigned at the discretion of the business concern to establish additional CCR records for identifying alternative Electronic Funds Transfer (EFT) accounts (see Subpart 32.11 of the Federal Acquisition Regulation) for the same parent concern.

"Registered in the CCR database" means that-

(1) The Contractor has entered all mandatory information, including the DUNS number or the DUNS+4 number, into the CCR database;

(2) The Government has validated all mandatory data fields, to include validation of the Taxpayer Identification Number (TIN)

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with the Internal Revenue Service (IRS), and has marked the record ``Active''. The Contractor will be required to provide consent for TIN validation to the Government as a part of the CCR registration process.

(b)

(1) By submission of an offer, the offeror acknowledges the requirement that a prospective awardee shall be registered in the CCR database prior to award, during performance, and through final payment of any contract, basic agreement, basic ordering agreement, or blanket purchasing agreement resulting from this solicitation.

(2) The offeror shall enter, in the block with its name and address on the cover page of its offer, the annotation DUNS or DUNS+4 followed by the DUNS or DUNS+4 number that identifies the offerors name and address exactly as stated in the offer. The DUNS number will be used by the Contracting Officer to verify that the offeror is registered in the CCR database.

(c) If the offeror does not have a DUNS number, it should contact Dun and Bradstreet directly to obtain one.

(1) An offeror may obtain a DUNS number

(i) If located within the United States, by calling Dun and Bradstreet at 1-866-705-5711 or via the Internet at <http://www.dnb.com/> ; or

(ii) If located outside the United States, by contacting the local Dun and Bradstreet office.

(2) The offeror should be prepared to provide the following information:

(i) Company legal business name.

(ii) Tradestyle, doing business, or other name by which your entity is commonly recognized.

(iii) Company physical street address, city, state and Zip Code.

(iv) Company mailing address, city, state and Zip Code (if separate from physical).

(v) Company telephone number.

(vi) Date the company was started.

(vii) Number of employees at your location.

(viii) Chief executive officer/key manager.

(ix) Line of business (industry).

(x) Company Headquarters name and address (reporting relationship within your entity).

(d) If the Offeror does not become registered in the CCR database in the time prescribed by the Contracting Officer, the Contracting Officer will proceed to award to the next otherwise successful registered Offeror.

(e) Processing time, which normally takes 48 hours, should be taken into consideration when registering. Offerors who are not registered should consider applying for registration immediately upon receipt of this solicitation.

(f) The Contractor is responsible for the accuracy and completeness of the data within the CCR database, and for any liability resulting from the Governments reliance on inaccurate or incomplete data. To remain registered in the CCR database after the initial registration, the Contractor is required to review and update on an annual basis from the date of initial registration or subsequent updates its information in the CCR database to ensure it is current, accurate and complete. Updating information in the CCR does not alter the terms and conditions of this contract and is not a substitute for a properly executed contractual document.

(1)

(i) If a Contractor has legally changed its business name, doing business as name, or division name (whichever is shown on the contract), or has transferred the assets used in performing the contract, but has not completed the necessary requirements regarding novation and change-of-name agreements in Subpart 42.12, the Contractor shall provide the responsible Contracting Officer a minimum of one business days written notification of its intention to:

(A) Change the name in the CCR database;

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(B) Comply with the requirements of Subpart 42.12 of the FAR;

(C) Agree in writing to the timeline and procedures specified by the responsible Contracting Officer.
The Contractor must provide with the notification sufficient documentation to support the legally changed name.

(ii) If the Contractor fails to comply with the requirements of paragraph (g)(1)(i) of this clause, or fails to perform the agreement at paragraph (g)(1)(i)(C) of this clause, and, in the absence of a properly executed novation or change-of-name agreement, the CCR information that shows the Contractor to be other than the Contractor indicated in the contract will be considered to be incorrect information within the meaning of the Suspension of Payment paragraph of the electronic funds transfer (EFT) clause of this contract.

(2) The Contractor shall not change the name or address for EFT payments or manual payments, as appropriate, in the CCR record to reflect an assignee for the purpose of assignment of claims (see FAR Subpart 32.8, Assignment of Claims). Assignees shall be separately registered in the CCR database. Information provided to the Contractors CCR record that indicates payments, including those made by EFT, to an ultimate recipient other than that Contractor will be considered to be incorrect information within the meaning of the Suspension of payment paragraph of the EFT clause of this contract.

(g) Offerors and Contractors may obtain information on registration and annual confirmation requirements via the Internet at <http://www.ccr.gov/> or by calling 1-888-227-2423, or 269-961-5757.

[End of Clause]

I-27 ADDED 52.222-39 NOTIFICATION OF EMPLOYEE RIGHTS CONCERNING PAYMENT OF UNION DUES OR DEC/2004
FEES

(a) Definition. As used in this clause--

United States means the 50 States, the District of Columbia, Puerto Rico, the Northern Mariana Islands, American Samoa, Guam, the U.S. Virgin Islands, and Wake Island.

(b) Except as provided in paragraph (e) of this clause, during the term of this contract, the Contractor shall post a notice, in the form of a poster, informing employees of their rights concerning union membership and payment of union dues and fees, in conspicuous places in and about all its plants and offices, including all places where notices to employees are customarily posted. The notice shall include the following information (except that the information pertaining to National Labor Relations Board shall not be included in notices posted in the plants or offices of carriers subject to the Railway Labor Act, as amended (45 U.S.C. 151-188)).

Notice to Employees

Under Federal law, employees cannot be required to join a union or maintain membership in a union in order to retain their jobs. Under certain conditions, the law permits a union and an employer to enter into a union-security agreement requiring employees to pay uniform periodic dues and initiation fees. However, employees who are not union members can object to the use of their payments for certain purposes and can only be required to pay their share of union costs relating to collective bargaining, contract administration, and grievance adjustment.

If you do not want to pay that portion of dues or fees used to support activities not related to collective bargaining, contract administration, or grievance adjustment, you are entitled to an appropriate reduction in your payment. If you believe that you have been required to pay dues or fees used in part to support activities not related to collective bargaining, contract administration, or grievance adjustment, you may be entitled to a refund and to an appropriate reduction in future payments.

For further information concerning your rights, you may wish to contact the National Labor Relations Board (NLRB) either at one of its Regional offices or at the following address or toll free number:

National Labor Relations Board
Division of Information
1099 14th Street, N.W.
Washington, DC 20570
1-866-667-6572
1-866-316-6572 (TTY)

To locate the nearest NLRB office, see NLRB's website at <http://www.nlrb.gov> .

(c) The Contractor shall comply with all provisions of Executive Order 13201 of February 17, 2001, and related implementing

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regulations at 29 CFR part 470, and orders of the Secretary of Labor.

(d) In the event that the Contractor does not comply with any of the requirements set forth in paragraphs (b), (c), or (g), the Secretary may direct that this contract be cancelled, terminated, or suspended in whole or in part, and declare the Contractor ineligible for further Government contracts in accordance with procedures at 29 CFR part 470, Subpart B--Compliance Evaluations, Complaint Investigations and Enforcement Procedures. Such other sanctions or remedies may be imposed as are provided by 29 CFR part 470, which implements Executive Order 13201, or as are otherwise provided by law.

- (e) The requirement to post the employee notice in paragraph (b) does not apply to--
- (1) Contractors and subcontractors that employ fewer than 15 persons;
 - (2) Contractor establishments or construction work sites where no union has been formally recognized by the Contractor or certified as the exclusive bargaining representative of the Contractor's employees;
 - (3) Contractor establishments or construction work sites located in a jurisdiction named in the definition of the United States in which the law of that jurisdiction forbids enforcement of union-security agreements;
 - (4) Contractor facilities where upon the written request of the Contractor, the Department of Labor Deputy Assistant Secretary for Labor-Management Programs has waived the posting requirements with respect to any of the Contractor's facilities if the Deputy Assistant Secretary finds that the Contractor has demonstrated that--
 - (i) The facility is in all respects separate and distinct from activities of the Contractor related to the performance of a contract; and
 - (ii) Such a waiver will not interfere with or impede the effectuation of the Executive order; or
 - (5) Work outside the United States that does not involve the recruitment or employment of workers within the United States.

- (f) The Department of Labor publishes the official employee notice in two variations; one for contractors covered by the Railway Labor Act and a second for all other contractors. The Contractor shall--
- (1) Obtain the required employee notice poster from the Division of Interpretations and Standards, Office of Labor-Management Standards, U.S. Department of Labor, 200 Constitution Avenue, NW, Room N-5605, Washington, DC 20210, or from any field office of the Department's Office of Labor-Management Standards or Office of Federal Contract Compliance Programs;
 - (2) Download a copy of the poster from the Office of Labor-Management Standards website at <http://www.olms.dol.gov>; or
 - (3) Reproduce and use exact duplicate copies of the Department of Labor's official poster.

(g) The Contractor shall include the substance of this clause in every subcontract or purchase order that exceeds the simplified acquisition threshold, entered into in connection with this contract, unless exempted by the Department of Labor Deputy Assistant Secretary for Labor-Management Programs on account of special circumstances in the national interest under authority of 29 CFR 470.3(c). For indefinite quantity subcontracts, the Contractor shall include the substance of this clause if the value of orders in any calendar year of the subcontract is expected to exceed the simplified acquisition threshold. Pursuant to 29 CFR part 470, Subpart B--Compliance Evaluations, Complaint Investigations and Enforcement Procedures, the Secretary of Labor may direct the Contractor to take such action in the enforcement of these regulations, including the imposition of sanctions for noncompliance with respect to any such subcontract or purchase order. If the Contractor becomes involved in litigation with a subcontractor or vendor, or is threatened with such involvement, as a result of such direction, the Contractor may request the United States, through the Secretary of Labor, to enter into such litigation to protect the interests of the United States.

[End of Clause]

I-28 252.204-7004 ALTERNATE A NOV/2003

As prescribed in 204.1104, substitute the following paragraph (a) for paragraph (a) of the clause at FAR 52.204-7:

- (a) Definitions. As used in this clause--
- "Central Contractor Registration (CCR) database" means the primary Government repository for contractor information required for the conduct of business with the Government.
- "Commercial and Government Entity (CAGE) code" means--
- (1) A code assigned by the Defense Logistics Information Service (DLIS) to identify a commercial or Government entity; or

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(2) A code assigned by a member of the North Atlantic Treaty Organization that DLIS records and maintains in the CAGE master file. This type of code is known as an "NCAGE code."

"Data Universal Numbering System (DUNS) number" means the 9-digit number assigned by Dun and Bradstreet, Inc. (D&B) to identify unique business entities.

"Data Universal Numbering System +4 (DUNS+4) number" means the DUNS number assigned by D&B plus a 4-character suffix that may be assigned by a business concern. (D&B has no affiliation with this 4-character suffix.) This 4-character suffix may be assigned at the discretion of the business concern to establish additional CCR records for identifying alternative Electronic Funds Transfer (EFT) accounts (see Subpart 32.11 of the Federal Acquisition Regulation) for the same parent concern.

"Registered in the CCR database" means that-

(1) The Contractor has entered all mandatory information, including the DUNS number or the DUNS+4 number, into the CCR database;

(2) The Contractor's CAGE code is in the CCR database; and

(3) The Government has validated all mandatory data fields and has marked the records "Active."

[End of Clause]

I-29 ADDED 52.219-4070 PILOT MENTOR-PROTEGE PROGRAM APR/2006

(a) The Pilot Mentor-Protege Program does not apply to small business concerns.

(b) Utilization of the Pilot Mentor-Protege Program (hereafter referred to as the Program) is encouraged. Under the Program, eligible companies approved as mentor firms enter into a mentor-protege agreement with eligible protege firms. The goal of the program is to provide appropriate developmental assistance to enhance the capabilities of the protege firm. The Mentor firm may be eligible for cost reimbursement or credit against their applicable subcontracting goals.

(c) Mentor firms are encouraged to identify and select concerns that are defined as emerging small business concerns, small disadvantaged business, women-owned small business, HUBZone small business, service-disabled veteran-owned small business, veteran-owned small business or an eligible entity employing the severely disabled.

(d) Full details of the program are located at [http://www.acq.osd.mil/sadbu/mentor protege/](http://www.acq.osd.mil/sadbu/mentor%20protege/), <http://sellingtoarmy.info/>, DFARS Appendix I, and DFARS Subpart 219.71, "Pilot Mentor-Protege Program."

(e) For additional questions after reviewing the information provided, contact the Office of Small Business Programs serving your area.

[End of Clause]

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SECTION J - LIST OF ATTACHMENTS

List of Addenda	Title	Date	Number of Pages	Transmitted By
Exhibit A	CONTRACT DATA REQUIREMENTS LIST (CDRL) (DD1423)		002	EMAIL

CONTRACT DATA REQUIREMENT LIST

Form Approval OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 440 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. Please DO NOT RETURN your form to either these addresses. Send completed form to the Government Issuing Contracting Officer for the Contract/PR No. listed in Block E.

A. CONTRACT LINE ITEM NO.:
B. EXHIBIT : A
C. CATEGORY.....:
D. SYSTEM/ITEM.....: Fastening and Joining Research Institute (FAJRI)
E. CONTRACT/PR NO.:DAAE07-03-C-L110
F. CONTRACTOR.....:Oakland University

1. DATA ITEM NO.: A001
2. TITLE OF DATA ITEM : Contractor's Progress Status and Management Report
3. SUBTITLE:
4. AUTHORITY: DI-MGMT-80227(T) (see 16a. below)
5. CONTRACT REFERENCE: C.19.1
6. REQUIRING OFFICE .: AMSRD-TAR-R / MS 121 9. DIST. STATEMENT REQUIRED: 12. DATE OF FIRST SUB: 60 DAC
7. DD250 REQ: LT 10. FREQUENCY : Bi-Monthly 13. DATE OF SUBS. SUB:Every 2 months
8. APP CODE: N/A 11. AS OF DATE:

14. DISTRIBUTION ADDRESSEES: SUBMIT REPORTS ELECTRONICALLY TO THE E-MAIL ADDRESSES SHOWN IMMEDIATELY BELOW:

Bill Mackie, CONTRACTING OFFICER'S REPRESENTATIVE, E-MAIL: bill.mackie@us.army.mil, AMSRD-TAR-R
Janet Joudas, CONTRACT SPECIALIST, E-MAIL: janet.joudas@us.army.mil, AMSTA-AQ-ASGA

15. TOTAL:

16. REMARKS:

a. The bimonthly report is to include the work done in the two-month period, planned work for the next two-month period and associated financial information.
The report shall be submitted electronically in a format compatible with MS Office

1. DATA ITEM NO.: A002
2. TITLE OF DATA ITEM : Developmental Drawings and Associated Lists
3. SUBTITLE:
4. AUTHORITY: DI-SESS-81002B(T)(see 16a. below)
5. CONTRACT REFERENCE: C.19.2
6. REQUIRING OFFICE .: AMSRD-TAR-R / MS 121 9. DIST. STATEMENT REQUIRED: 12. DATE OF FIRST SUB: end of contract
7. DD250 REQ: LT 10. FREQUENCY : 13. DATE OF SUBS. SUB:
8. APP CODE: N/A 11. AS OF DATE: Contract Award

14. DISTRIBUTION ADDRESSEES: SUBMIT REPORTS ELECTRONICALLY TO THE E-MAIL ADDRESSES SHOWN IMMEDIATELY BELOW:

Bill Mackie, CONTRACTING OFFICER'S REPRESENTATIVE, E-MAIL: bill.mackie@us.army.mil; AMSRD-TAR-R;

15. TOTAL:

16. REMARKS:

a. DID is tailored to remove requirement in paragraph 6.

1. DATA ITEM NO.: A003
2. TITLE OF DATA ITEM : SCIENTIFIC AND TECHNICAL REPORT
3. SUBTITLE: DRAFT/FINAL TECHNICAL REPORT

4. AUTHORITY: DI-MISC-80711A(T) (see 16a. below)
5. CONTRACT REFERENCE: C.2.8, C.4.12, C.5.3, C.6.9, C.7.6, C.8.3, C.9.5, C.10.7, C.11.3, C.12.5, C.13.6, C.14.4, C.15.4, C.16.5, C.17.4, C.17.5, C.18.5, C.18.6, C.19.3, C.20.5, C.20.6
6. REQUIRING OFFICE .: AMSRD-TAR-R / MS 121 9. DIST. STATEMENT REQUIRED: 12. DATE OF FIRST SUB: SEE ITEM 16
7. DD250 REQ: DD 10. FREQUENCY : SEE ITEM 16 13. DATE OF SUBS. SUB: SEE ITEM 16
8. APP CODE: A 11. AS OF DATE:

14. DISTRIBUTION ADDRESSEES: SUBMIT REPORTS ELECTRONICALLY TO THE E-MAIL ADDRESSES SHOWN IMMEDIATELY BELOW:

Bill Mackie, CONTRACTING OFFICER'S REPRESENTATIVE, E-MAIL: bill.mackie@us.army.mil
Janet Joudas, CONTRACT SPECIALIST, E-MAIL: janet.joudas@us.army.mil

15. TOTAL:

16. REMARKS:

a. DI-MISC-80711A is tailored by deleting 10.2.

b. The contractor shall deliver an interim technical report 30 days after completion of each individual project. The contractor shall submit a Draft of the Final Technical Report (C.19.3) 45 days after completion of all the technical work under the contract. The Government will review the draft Final Report within 30 days and return it to the contractor for changes/corrections. The final Technical Report, in published format, shall be submitted within fifteen days after Government approval of the Draft Final Report.

DATA ITEM NO.: A004
2. TITLE OF DATA ITEM : Test Plan
3. SUBTITLE:

4. AUTHORITY: DI-NDTI-80566 (see 16a. below)
5. CONTRACT REFERENCE: C.19.4
6. REQUIRING OFFICE .: AMSRD-TAR-R / MS 121 9. DIST. STATEMENT REQUIRED: 12. DATE OF FIRST SUB: 45 days before test
7. DD250 REQ: LT 10. FREQUENCY : one per test 13. DATE OF SUBS. SUB:

8. APP CODE: N/A 11. AS OF DATE: Contract Modification Award

14. DISTRIBUTION ADDRESSEES: SUBMIT DELIVERABLE ELECTRONICALLY TO THE E-MAIL ADDRESSES SHOWN IMMEDIATELY BELOW:

Bill Mackie, CONTRACTING OFFICER'S REPRESENTATIVE, E-MAIL: bill.mackie@us.army.mil

IF ELECTRONIC DELIVER IS NOT POSSIBLE, DELIVER TO:

U.S. Army Tank-automotive and Armaments Command
ATTN: AMSRD-TAR-R/Mr. Bill Mackie, MS 159
6501 E. 11 Mile Rd.
Warren, MI 48397-5000

15. TOTAL:

16. REMARKS:

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MOD/AMD P00005
ATT/EXH ID Exhibit A
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